

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT MUNICIPAL SOLID WASTE LANDFILL CLOSURE PLAN

CLOSURE PLAN FORM SWF-3

SF 50390 (7-01)

To begin:

<u>Please read the instruction manual before beginning</u>. This form shall be used to submit closure plans for municipal solid waste landfills (MSWLFs) both individually and with permit applications. Closure plans, either individually or with permit applications, along with support documentation, should be submitted to:

Solid Waste Permits Section
Office of Land Quality (N1154)
Indiana Department of Environmental Management
100 North Senate Avenue, P. O. Box 6015
Indianapolis, Indiana 46206-6015

MUNICIPAL SOLID WASTE LANDFILL CLOSURE PLAN (329 IAC 10-22)

•	GE	ENERAL INFORMATION
	A.	Facility Name:
	В.	Facility Location:
	C.	Facility County:
	D.	Facility Solid Waste Permit No. (if existing permitted facility)
	E.	Total Fill Acreage

II. CLOSURE ACTIVITIES-GENERAL DESCRIPTION

Provide a description of the steps that will be used to partially close, if applicable, and finally close the facility. See instructions for items that should be included

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II. CLOSURE ACTIVITIES-GENERAL DESCRIPTION-Continued (Photocopy additional pages as necessary)

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III. FINAL COVER DESCRIPTION - Provide a detailed description of the final cover (see instructions). Attach additional sheets as necessary.

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IV. LABOR, MATERIALS AND TESTING - Provide a listing of items necessary to close the facility (see instructions). For items that will vary depending upon the number of acres to be closed, the quantities should be indicated on a per acre basis. Include items for both the closure activities and final cover noted above. Use additional sheets as needed. B. Quantity A. Item (use applicable unit as appropriate) (use unit as appropriate)

Although this closure plan form is being provided to aid you in preparing your closure plan in accordance with the new rules, this form is subject to review and revision. Please consult the actual rule language. 8/99

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T 7	EVDECTED	VEADORCI	OCTIDE AND	CLOSURE SCHEDULI
V .	FAPRA IRI) YEAK UE C.L.	USUKE AND	CLOSURE SCHEDULI

A.	Expected Year of Closure	
B.	Total Time Required to Close Facility	

C. Time Required for Completion of Intervening Closure Activities - Provide a description of intervening closure activities and the time required; see instructions.

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VI. ESTIMATE OF MAXIMUM INVENTORY OF WASTE

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VII. ESTIMATE OF COST PER ACRE FOR FINAL COVER & VEGETATION - Please see instructions; attach additional sheets as necessary.

A. COVER MATERIAL AVAILABILITY, & ACQUISITION, PLACEMENT AND COMPACTION COSTS FOR AREAS CLOSING WITH <u>A COMPOSITE BOTTOM LINER AND A LEACHATE COLLECTION SYSTEM</u>-329 IAC 10-22-6(b)

1. Percent of Final Cover Material Available from Areas That Are Controlled, and Will be Controlled Through Post-Closure, by the Owner, Operator or Permittee.

a.	Methane Gas Venting Layer Ma	nterial (12 inches)
	1) % of material	
	2) Describe location of sources _ (include distance from facility)	
	-	
	-	
b.	Soil Barrier Layer Material (lov	ver 12 inches-structural fill)
	1) % of material	
	2) Describe location of sources _ (include distance from facility)	
	_	
	-	
c.	Soil Barrier Layer Material (up	per 12 inches-earthen material)
	1) % of material	
	2) Describe location of sources _ (include distance from facility)	
	-	
	_	
	_	
d.	Geomembrane layer not applie	cable-delivered to site
e.	Drainage Layer Material (12 in	ches)
	1) % of material	
	2) Describe location of sources	

		(include distance from facility)	Pageof (MSWLF Closure Form Page 8 of 29)
	f.	1) % of material	erial (18 inches; 30 inches if geosynthetic drainage layer used)
	g.	Vegetative Layer (topsoil) (6 in 1) % of material 2) Describe location of sources (include distance from facility)	nches)
2.	Co.	st Per Acre for Acquisition, Place Methane Gas Venting Layer M. 1) Acquisition a) Quantity of material needed per acre (yd³)	cement & Compaction of Final Cover Layers [aterial (12 inches)] [according to the content of t

e) Acquisition cost (\$/acre) Line 1.a * line 1.b (on-site) or

d) Delivery unit cost (\$/yd³) (if obtained off-site)

b) Excavation unit cost (\$/yd³) (if obtained on-site)

c) Purchase unit cost (\$/yd³) (if obtained off-site)

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		Line 1.a * (line 1.c + line 1.d) (off-site)		
2)	Pla	acement and Spreading		
	a)	Placement/spreading cost (\$/yd³)		
	b)	Placement and spreading costs (\$/acre) line 1.a * line 2.a		
3)	Te	sting and QA/QC		
	a)	Tests for grain size and hydraulic conductivity (\$/acre)		
	b)	Survey control for cover thickness (\$/acre)		
	c)	Testing cost (\$/acre) Line 3.a + line 3.b		
	4)	TOTAL COST, METHANE GAS VENT Line 1.e + line 2.b + line 3.c	TING LAYER (\$/acre)	
Soi	il Ba	arrier Layer Material and Structural Fill ((24 inches) Per Acre	
1)	Ac	quisition		
	a)	Quantity of material needed per acre (yd³)	3,227 yd ³	
	b)	Excavation unit cost (\$/yd³) (if obtained on-site)		
	c)	Purchase unit cost (\$/yd³) (if obtained off-site)		
	d)	Delivery unit cost (\$/yd³) (if obtained off-site)		
	e)	Acquisition cost (\$/acre) Line 1.a * line 1.b (on-site) or Line 1.a * (line 1.c + line 1.d) (off-site)		
2)	Pla	acement and Compaction		
	a)	Placement/spreading cost (\$/yd³)		
	b)	Compaction unit cost (\$/yd³)		
	c)	Placement and compaction costs (\$/acre) line 1.a * (line 2.a + line 2.b)		

b.

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3)	Tes	sting and QA/QC	(
	a)	Tests for grain size, Atterberg limits and hydraulic conductivity (\$/acre)		
	b)	Survey control for cover thickness (\$/acre)		
	c)	Density and moisture content testing (if planned) (\$/acre)		
	d)	Testing cost (\$/acre) Line 3.a + line 3.b + line 3.c		
4)	AN	OTAL COST, SOIL BARRIER LAYER ID STRUCTURAL FILL (\$/acre) ie 1.e + line 2.c + line 3.d		
Ge	ome	embrame Liner		
1)	Ac	quisition		
	a)	Quantity of material needed per acre (yd²)	4,840 yd ²	
	b)	Purchase unit cost (\$/yd²)		
	c)	Delivery unit cost (\$/yd²) (if applicable)		
	d)	Acquisition cost (\$/acre) Line 1.a * (line 1.b + line 1.c)		
2)	Pla	cement		
	a)	Placement unit cost (\$/yd²) (if applicable and not included in purchasing unit cost)		
	b)	Placement costs (\$/acre) Line 1.a * line 2.a		
3)	Tes	sting and QA/QC		
	a)	Fingerprinting, destructive (shear, and peel tests) & non-destructive seam test) (\$/acre)		

c.

b) Other testing (\$/acre)

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4) TOTAL COST, GEOMEMBRANE LINER (\$/acre)	

Dr	aina	age Layer Material (12 inches) Per Acre	
1)	Ac	equisition	
	a)	Quantity of material needed per acre (yd³) 1,613 yd³	
	b)	Excavation unit cost (\$/yd³) (if obtained on-site)	
	c)	Purchase unit cost (\$/yd³) (if obtained off-site)	
	d)	Delivery unit cost (\$/yd³) (if obtained off-site)	
	e)	Acquisition cost (\$/acre) Line 1.a * line 1.b (on-site) or Line 1.a * (line 1.c + line 1.d) (off-site)	
2)	Pla	acement and Spreading	
	a)	Placement/spreading cost (\$/yd³)	
	b)	Placement and spreading costs (\$/acre) line 1.a * line 2.a	
3)	Tes	sting and QA/QC	
	a)	Tests for grain size and hydraulic conductivity (\$/acre)	
	b)	Survey control for cover thickness (\$/acre)	
	c)	Testing cost (\$/acre) Line 3.a + line 3.b	
4)		OTAL COST, DRAINAGE LAYER MATERIAL (\$/acre) ne 1.e + line 2.b + line 3.c	

Line 1.d + line 2.b + line 3.c

d.

e. **Top Protective Soil Layer Material (18 inches; 30 inches if geosynthetic drainage layer used) Per Acre** If drainage layer constructed of soil, the top protective soil layer must be at least 18 inches thick (2420 yd³/ac); if drainage layer constructed with geosynthetics, the top protective soil layer must be at least 30 inches thick (4033 yd³/ac).

1)	Ac	quisition		
	a)	Quantity of material needed per acre (yd³)	2,420 yd ³ -18 in. layer 4,033 yd ³ -30 in. layer	
	b)	Excavation unit cost (\$/yd³) (if obtained on-site)		
	c)	Purchase unit cost (\$/yd³) (if obtained off-site)		
	d)	Delivery unit cost (\$/yd³) (if obtained off-site)		
	e)	Acquisition cost (\$/acre) Line 1.a * line 1.b (on-site) or Line 1.a * (line 1.c + line 1.d) (off-site)		
2)	Pla	cement and Spreading		
	a)	Placement/spreading cost (\$/yd³)		
	b)	Placement and spreading costs (\$/acre) line 1.a * line 2.a		
3)	Tes	sting and QA/QC		
	a)	Tests for grain size (\$/acre)		
	b)	Survey control for cover thickness (\$/acre)		
	c)	Testing cost (\$/acre) Line 3.a + line 3.b		
4)		OTAL COST, TOP PROTECTIVE SOIL Let 1.e + line 2.b + line 3.c	AYER (\$/acre)	
Ve	geta	ative Layer (topsoil) Material (6 inches) Per	Acre	
1)	Ac	quisition		
	a)	Quantity of material needed per acre (yd³)	807 yd ³	
	b)	Excavation unit cost (\$/yd³) (if obtained on-site)		
	c)	Purchase unit cost (\$/yd³) (if obtained off-site)		
	d)	Delivery unit cost (\$/yd³) (if obtained off-site)		

f.

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		e) Acquisition cost (\$/acre) Line 1.a * line 1.b (on-site) or Line 1.a * (line 1.c + line 1.d) (off-site)	
	2)	Placement	
		a) Spreading unit cost (\$/yd³)	
		b) Placement costs (\$/acre) line 1.a * line 2.a	
	3)	TOTAL COST, VEGETATIVE SOIL LAYER (\$/s Line 1.e + line 2.b	ncre)
g.	&	OTAL COST PER ACRE FOR ACQUISITION, PLA COMPACTION OF FINAL COVER LAYERS ne a.4 + line b.4 + line c.4 + line d.4 + line e.4 + line f3	
CI <u>W</u> Pe	LOS <u>ITH</u> rcen	LABILITY, & ACQUISITION, PLACEMENT AND SING WITH A <u>SOIL BOTTOM LINER AND A</u> H SLOPES EQUAL TO OR LESS THAN 15%-3 nt of Final Cover Material Available from Areas Tha	LEACHATE COLLECTION SYSTEM 29 IAC 10-22-7(b)(1) t Are Controlled, and Will be Controlled
Th a.		igh Post-Closure, by the Owner, Operator or Permittoil Barrier Layer Material (24 inches; k #1 x 10 ⁻⁷ cm/s	
		% of material	<u></u>
		Describe location of sources(include distance from facility)	
b.	Ve	egetative Layer (topsoil)	
		% of material	_
	2)	Describe location of sources	

B.

1.

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(include distance from facility)

Co	st P	er A	Acre for Acquisition, Placement & Compac	tion of Final Cover Layers	
a.	Soi	il Ba	arrier Layer Material (24 inches; k #1 x 10	⁻⁷ cm/sec) Per Acre	
	1)	Ac	equisition		
		a)	Quantity of material needed per acre (yd³)	3,227 yd ³	
		b)	Excavation unit cost (\$/yd³) (if obtained on-site)		
		c)	Purchase unit cost (\$/yd³) (if obtained off-site)		
		d)	Delivery unit cost (\$/yd³) (if obtained off-site)		
		e)	Acquisition cost (\$/acre) Line 1.a * line 1.b (on-site) or Line 1.a * (line 1.c + line 1.d) (off-site)		
	2)	Pla	acement and Compaction		
		a)	Placement/spreading cost (\$/yd³)		
		b)	Compaction unit cost (\$/yd³)		
		c)	Placement and compaction costs (\$/acre) line 1.a * (line 2.a + line 2.b)		
	3)	Те	sting and QA/QC		
		a)	Tests for grain size, Atterberg limits and hydraulic conductivity (\$/acre)		
		b)	Survey control for cover thickness (\$/acre)		
		c)	Density testing (\$/acre)		
		d)	Testing cost (\$/acre) Line 3.a + line 3.b + line 3.c		
b.	4) Ve	Liı	OTAL COST, SOIL BARRIER LAYER (\$/ne 1.e + line 2.c + line 3.d ative Layer (topsoil) Material (6 inches)	acre)	
	1)	Ac	equisition		
		a)	Quantity of material needed per acre (yd ³)	807 yd ³	
		b)	Excavation unit cost (\$/yd³)		

2.

					(IVI)	WLF Closule Folili Fage 13 of 29)
				(if obtained on-site)		
			c)	Purchase unit cost (\$/yd² (if obtained off-site)		<u></u>
			d)	Delivery unit cost (\$/yd³ (if obtained off-site)		
			e)	Acquisition cost (\$/acre) Line 1.a * line 1.b (on-si Line 1.a * (line 1.c + line	ite) or	
		2)	Pla	cement		
			a)	Spreading unit cost (\$/yo	d ³)	
			b)	Placement costs (\$/acre) line 1.a * line 2.a		
		3)		TAL COST, VEGETATE	ΓΙ VE LAYER (topsoil)(\$/acre)	
	c.				OR ACQUISITION, PLACEMENT	
		Lin	e a.4	4 + line b.3	COVER LAYERS	
C.	CI	Lin AII LOS	e a.4 LAB IN(4 + line b.3 ILITY, & ACQUISITIO G WITH A <u>SOIL BOT</u>	COVER LAYERS ON, PLACEMENT AND COMPACTION TOM LINER AND A LEACHATE (HAN 15%-329 IAC 10-22-7(b)(2)	
	CI W	Lin AII AS ITH	LAB IN(ISL t of	4 + line b.3 ILITY, & ACQUISITIO G WITH A <u>SOIL BOT</u> OPES GREATER TH Final Cover Material A	ON, PLACEMENT AND COMPACTION TOM LINER AND A LEACHATE (COLLECTION SYSTEM
	CI W	Lin AII AII TH rcen rous	LAB IN(ISL t of gh P	4 + line b.3 ILITY, & ACQUISITION G WITH A SOIL BOTH OPES GREATER THE Final Cover Material A lost-Closure, by the Own	ON, PLACEMENT AND COMPACTION TOM LINER AND A LEACHATE (HAN 15%-329 IAC 10-22-7(b)(2) Vailable from Areas That Are Controllec	collection system
	CI W: Per Th	Lin AII AII LOS ITH rcen roug	LAB INC ISL t of gh P	4 + line b.3 ILITY, & ACQUISITION G WITH A SOIL BOTH OPES GREATER THE Final Cover Material A lost-Closure, by the Own	ON, PLACEMENT AND COMPACTION TO LINER AND A LEACHATE (STAN 15%-329 IAC 10-22-7(b)(2) vailable from Areas That Are Controlled ner, Operator or Permittee.	collection system
	CI W: Per Th	Lin /AII /	LABING INCISL tof gh P I Ba	4 + line b.3 ILITY, & ACQUISITION OF WITH A SOIL BOTH OPES GREATER THE Final Cover Material A cost-Closure, by the Ownerier Layer Material (2) To material	ON, PLACEMENT AND COMPACTION TOM LINER AND A LEACHATE (HAN 15%-329 IAC 10-22-7(b)(2) vailable from Areas That Are Controlled ner, Operator or Permittee.	collection system d, and Will be Controlled roved plan; k #1 x 10 ⁻⁶ cm/sec)
	CI W: Per Th	Lin /AII /	LABING INCISL tof gh P I Ba	4 + line b.3 ILITY, & ACQUISITION OF WITH A SOIL BOTH OPES GREATER TENTE OPES GREATER	ON, PLACEMENT AND COMPACTION TOM LINER AND A LEACHATE (HAN 15%-329 IAC 10-22-7(b)(2) vailable from Areas That Are Controlled ner, Operator or Permittee.	collection system d, and Will be Controlled roved plan; k #1 x 10 ⁻⁶ cm/sec)
	CI W: Per Th	Lin /AII /	LABING INCISL tof gh P I Ba	4 + line b.3 ILITY, & ACQUISITION OF WITH A SOIL BOTH OPES GREATER TENTE OPES GREATER	ON, PLACEMENT AND COMPACTION TOM LINER AND A LEACHATE (STAN 15%-329 IAC 10-22-7(b)(2) vailable from Areas That Are Controlledner, Operator or Permittee. 4 inches-thickness may be more per appropriate to the controlled of the co	d, and Will be Controlled roved plan; k #1 x 10 ⁻⁶ cm/sec)
	CI W: Per Th	Lin VAII OS ITH Cos Soi 1) 9	ABING ING ISL tof gh P IBa % of	4 + line b.3 ILITY, & ACQUISITION OF WITH A SOIL BOTH OPES GREATER TENTE OPES GREATER	ON, PLACEMENT AND COMPACTION TOM LINER AND A LEACHATE (HAN 15%-329 IAC 10-22-7(b)(2) vailable from Areas That Are Controlled ner, Operator or Permittee. 4 inches-thickness may be more per approximately approxima	d, and Will be Controlled roved plan; k #1 x 10 ⁻⁶ cm/sec)
	CI W: Per Th	Lin VAII LOS ITH reen roug Soi 1) (Veg	LABING ING ISL t of gh P l Ba % of Desc inclused	ILITY, & ACQUISITION OPES GREATER TENTE OPES GREATE	ON, PLACEMENT AND COMPACTION TOM LINER AND A LEACHATE (HAN 15%-329 IAC 10-22-7(b)(2) vailable from Areas That Are Controlled ner, Operator or Permittee. 4 inches-thickness may be more per approximately approxima	d, and Will be Controlled roved plan; k #1 x 10 ⁻⁶ cm/sec)
	CI W: Per Th	Ven	LABING INC ISL tof gh P Bescimelt	ILITY, & ACQUISITION OPES GREATER THE COVER MATERIAL PROSTORION OF MATERIAL PROSTORION OF SOURCES AND ACCOUNTY OF THE COUNTY OF	ON, PLACEMENT AND COMPACTION TOM LINER AND A LEACHATE (HAN 15%-329 IAC 10-22-7(b)(2) vailable from Areas That Are Controlled ner, Operator or Permittee. 4 inches-thickness may be more per approximately approxima	d, and Will be Controlled roved plan; k #1 x 10 ⁻⁶ cm/sec)

. S c	oil Ba	arrier Layer Material (24 inches; k #1 x 10	⁶ cm/sec) Per Acre	
1)) Ac	equisition		
	a)	Quantity of material needed per acre (yd³)	3,227 yd ³	
	b)	Excavation unit cost (\$/yd³) (if obtained on-site)		
	c)	Purchase unit cost (\$/yd³) (if obtained off-site)		
	d)	Delivery unit cost (\$/yd³) (if obtained off-site)		
	e)	Acquisition cost (\$/acre) Line 1.a * line 1.b (on-site) or Line 1.a * (line 1.c + line 1.d) (off-site)		
2)) Pla	acement and Compaction		
	a)	Placement/spreading cost (\$/yd³)		
	b)	Compaction unit cost (\$/yd³)		
	c)	Placement and compaction costs (\$/acre) line 1.a * (line 2.a + line 2.b)		
3)) Te	sting and QA/QC		
	a)	Tests for grain size, Atterberg limits and hydraulic conductivity (\$/acre)		
	b)	Survey control for cover thickness (\$/acre)		
	c)	Density testing (\$/acre)		
	d)	Testing cost (\$/acre) Line 3.a + line 3.b + line 3.c		
4)		OTAL COST, SOIL BARRIER LAYER (\$/ne 1.e + line 2.c + line 3.d	acre)	

b. Vegetative Layer (topsoil) Material (6 inches) Per Acre

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		1)	Ac	quisition			
			a)	Quantity of material nee	eded per acre (yd³)	807 yd ³	
			b)	Excavation unit cost (\$/\frac{1}{2}\) (if obtained on-site)	yd³)		
			c)	Purchase unit cost (\$/yd (if obtained off-site)	³)		
			d)	Delivery unit cost (\$/yd² (if obtained off-site)	3)		
			e)	Acquisition cost (\$/acre Line 1.a * line 1.b (on-si Line 1.a * (line 1.c + lin	ite) or		
		2)	Pla	acement			
			a)	Spreading unit cost (\$/ye	d ³)		
			b)	Placement costs (\$/acre) line 1.a * line 2.a			
		3)		OTAL COST, VEGETA'ne 1.e + line 2.b	TIVE LAYER (top	osoil)(\$/acre)	
	c.	&	COI	L COST PER ACRE FO MPACTION OF FINAL 4 + line b.3		•	
	FC CC TF	OR A	RE EC' 15º	AS CLOSING <u>WITHO</u> FION SYSTEM, CLOSI 6-329 IAC 10-22-7(c)(1)	UT A COMPOSIT ING AFTER JANU	E OR SOIL BOTTO JARY 1, 1998, WITI	NT AND COMPACTION COSTS OM LINER OR A LEACHATE H SLOPES EQUAL TO OR LESS
1.				Final Cover Material A Post-Closure, by the Own			led, and Will be Controlled
	a.	Me	etha	ne Gas Venting Layer M	Material (12 inches)		
		1)	% o	f material			
				cribe location of sources ude distance from facility)			

b. Soil Barrier Layer Material (lower 12 inches-structural fill)

		Page of Page For Page 18 (20)
	1) % of material	(MSWLF Closure Form Page 18 of 29)
	2) Describe location of sources (include distance from facility)	
c.	Soil Barrier Layer Material (u	pper 12 inches-earthen material)
	1) % of material	
	2) Describe location of sources (include distance from facility)	
d.	Geomembrane layer not appl	icable-delivered to site
e.	Drainage Layer Material (12 in	nches)
	1) % of material	
	2) Describe location of sources (include distance from facility)	
f.	Top Protective Soil Layer Mat	erial (18 inches; 30 inches if geosynthetic drainage layer used)
	1) % of material	
	2) Describe location of sources (include distance from facility)	
g.	Vegetative Layer (topsoil) (6 in	aches)

1) % of material

2) Describe location of sources (include distance from facility)					ageof osure Form Page 19 of 29)
			acre for Acquisition, Placement & Compa ne Gas Venting Layer Material (12 inches	·	
			quisition	y I et Aere	
		a)	Quantity of material needed per acre (yd³)	1,613 yd ³	
		b)	Excavation unit cost (\$/yd³) (if obtained on-site)		
		c)	Purchase unit cost (\$/yd³) (if obtained off-site)		
		d)	Delivery unit cost (\$/yd³) (if obtained off-site)		
		e)	Acquisition cost (\$/acre) Line 1.a * line 1.b (on-site) or Line 1.a * (line 1.c + line 1.d) (off-site)		
2	2)	Pla	cement and Spreading		
		a)	Placement/spreading cost (\$/yd³)		
		b)	Placement and compaction costs (\$/acre) line 1.a * line 2.a		
3	3)	Tes	sting and QA/QC		
		a)	Tests for grain size and hydraulic conductivity (\$/acre)		
		b)	Survey control for cover thickness (\$/acre)		
		c)	Testing cost (\$/acre) Line 3.a + line 3.b		
		4)	TOTAL COST, METHANE GAS VENT	ING LAYER (\$/acre)	

Line 1.e + line 2.b + line 3.c

b.	Soi	l Ba	arrier Layer Material and Structural Fill (2	24 inches) Per Acre	
	1)	Ac	quisition		
		a)	Quantity of material needed per acre (yd³)	3,227 yd ³	
		b)	Excavation unit cost (\$/yd³) (if obtained on-site)		
		c)	Purchase unit cost (\$/yd³) (if obtained off-site)		
		d)	Delivery unit cost (\$/yd³) (if obtained off-site)		
		e)	Acquisition cost (\$/acre) Line 1.a * line 1.b (on-site) or Line 1.a * (line 1.c + line 1.d) (off-site)		
	2)	Pla	cement and Compaction		
		a)	Placement/spreading cost (\$/yd³)		
		b)	Compaction unit cost (\$/yd³)		
		c)	Placement and compaction costs (\$/acre) line 1.a * (line 2.a + line 2.b)		
	3)	Te	sting and QA/QC		
		a)	Tests for grain size, Atterberg limits and hydraulic conductivity (\$/acre)		
		b)	Survey control for cover thickness (\$/acre)		
		c)	Density and moisture content testing (\$/acre)		
		d)	Testing cost (\$/acre) Line 3.a + line 3.b + line 3.c		
	4)	AN	OTAL COST, SOIL BARRIER LAYER ND STRUCTURAL FILL (\$/acre) ne 1.e + line 2.c + line 3.d		
c.	Ge	ome	embrame Liner Per Acre		
	1)	Ac	quisition		
		a)	Quantity of material needed per acre (yd²)	$4.840~\mathrm{yd}^2$	

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	b)	Purchase unit cost (\$/yd²)		
	c)	Delivery unit cost (\$/yd²) (if applicable)		
	d)	Acquisition cost (\$/acre) Line 1.a * (line 1.b + line 1.c)		
2)	Pla	cement		
	a)	Placement unit cost (\$/yd²) (if applicable and not included in purchasing unit cost)		
	b)	Placement costs (\$/acre) Line 1.a * line 2.a		
3)	Tes	sting and QA/QC		
	a)	Fingerprinting, destructive (shear, and peel tests) & non-destructive seam tests) (\$/acre)		
	b)	Other testing (\$/acre)		
	c)	Testing cost (\$/acre) Line 3.a + line 3.b (if applicable)		
4)		OTAL COST, GEOMEMBRANE LINER (tie 1.d + line 2.b + line 3.c	\$/acre)	
Dra	aina	ge Layer Material (12 inches) Per Acre		
1)		quisition Quantity of material needed per acre (yd³)	1,613 yd ³	
	b)	Excavation unit cost (\$/yd³) (if obtained on-site)		
	c)	Purchase unit cost (\$/yd³) (if obtained off-site)		
	d)	Delivery unit cost (\$/yd³) (if obtained off-site)		
	e)	Acquisition cost (\$/acre) Line 1.a * line 1.b (on-site) or Line 1.a * (line 1.c + line 1.d) (off-site)		

d.

2) Placement and Spreading

				geof_ ure Form Page 22 of 29)
	a)	Placement/spreading cost (\$/yd³)		
	b)	Placement and spreading costs (\$/acre) line 1.a * line 2.a		
3)	Tes	sting and QA/QC		
	a)	Tests for grain size limits and hydraulic conductivity (\$/acre)		
	b)	Survey control for cover thickness (\$/acre)		
	c)	Testing cost (\$/acre) Line 3.a + line 3.b		
4)		OTAL COST, DRAINAGE LAYER MATE ne 1.e + line 2.b + line 3.c	RIAL (\$/acre)	
If c	lrain /ac)	rotective Soil Layer Material (18 inches; 30 age layer constructed of soil, the top protective; if drainage layer constructed with geosynthe thick (4033 yd ³ /ac).	ve soil layer must be at least 18	8 inches thick (2420
1)	Ac	quisition		
	a)	Quantity of material needed per acre (yd³)	2,420 yd ³ -18 in. layer 4,033 yd ³ -30 in. layer	
	b)	Excavation unit cost (\$/yd³) (if obtained on-site)		
	c)	Purchase unit cost (\$/yd³) (if obtained off-site)		
	d)	Delivery unit cost (\$/yd³)		
	e)	(if obtained off-site) Acquisition cost (\$/acre) Line 1.a * line 1.b (on-site) or Line 1.a * (line 1.c + line 1.d) (off-site)		
2)	Pla	cement and Spreading		
	a)	Placement/spreading cost (\$/yd³)		
	b)	Placement and spreading costs (\$/acre) line 1.a * line 2.a		
3)	Tes	sting and QA/QC		
	a)	Tests for grain size (\$/acre)		
	b)	Survey control for cover thickness		

e.

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			(\$/acre)		
		c)	Testing cost (\$/acre) Line 3.a + line 3.b		
	4)		OTAL COST, TOP PROTECTIVE SOIL in 1.e + line 2.b + line 3.c	LAYER (\$/acre)	
f.	Ve	geta	ative Layer (topsoil) Material (6 inches)		
	1)	Ac	quisition		
		a)	Quantity of material needed per acre (yd³)	807 yd ³	
		b)	Excavation unit cost (\$/yd³) (if obtained on-site)		
		c)	Purchase unit cost (\$/yd³) (if obtained off-site)		
		d)	Delivery unit cost (\$/yd³) (if obtained off-site)		
		e)	Acquisition cost (\$/acre) Line 1.a * line 1.b (on-site) or Line 1.a * (line 1.c + line 1.d) (off-site)		
	2)	Pla	acement		
		a)	Spreading unit cost (\$/yd³)		
		b)	Placement costs (\$/acre) line 1.a * line 2.a		
	3)		OTAL COST, VEGETATIVE LAYER (\$/s ne 1.e + line 2.b	acre)	
g.	&	CO	L COST PER ACRE FOR ACQUISITION MPACTION OF FINAL COVER LAYER 4 + line b.4 + line c.4 + line d.4 + line e.4 + line	\mathbf{S}	

- E. AVAILABILITY, & ACQUISITION, PLACEMENT AND COMPACTION COSTS FOR AREAS CLOSING <u>WITHOUT A COMPOSITE OR SOIL BOTTOM LINER OR A LEACHATE</u>

 <u>COLLECTION SYSTEM, CLOSING AFTER JANUARY 1, 1998, WITH SLOPES GREATER THAN 15%-329 IAC 10-22-7(c)(2)</u>
- 1. Percent of Final Cover Material Available from Areas That Are Controlled, and Will be Controlled Through Post-Closure, by the Owner, Operator or Permittee.
 - a. Soil Barrier Layer Material (24 inches-thickness may be more per approved plan; k #1 x 10^{-6} cm/sec)

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	1)) % o	f material	<u> </u>
	2)	*	cribe location of sourcesude distance from facility)	
b.	. v	⁷ egeta	ative Layer (topsoil)	
	1)) % of	f material	
	2)	·	cribe location of sourcesude distance from facility)	
C	cost	Per A	Acre for Acquisition, Placemen	t & Compaction of Final Cover Layers
a.	C			
	. 5	oil Ba	arrier Layer Material (24 inch	es; k #1 x 10 ⁻⁶ cm/sec) Per Acre
	. S		arrier Layer Material (24 inchequisition	es; k #1 x 10 ⁻⁶ cm/sec) Per Acre
			•	
) Ac	quisition	
) Ac	quisition Quantity of material needed pe Excavation unit cost (\$/yd³)	
		Aca)b)c)	quisition Quantity of material needed pe Excavation unit cost (\$/yd³) (if obtained on-site) Purchase unit cost (\$/yd³) (if obtained off-site) Delivery unit cost (\$/yd³)	
		a)b)c)d)	quisition Quantity of material needed pe Excavation unit cost (\$/yd³) (if obtained on-site) Purchase unit cost (\$/yd³) (if obtained off-site)	r acre (yd³)
		Aca)b)c)d)e)	quisition Quantity of material needed pe Excavation unit cost (\$/yd³) (if obtained on-site) Purchase unit cost (\$/yd³) (if obtained off-site) Delivery unit cost (\$/yd³) (if obtained off-site) Acquisition cost (\$/acre) Line 1.a * line 1.b (on-site) or	r acre (yd³)
	1)	Aca)b)c)d)e)	Quantity of material needed pe Excavation unit cost (\$/yd³) (if obtained on-site) Purchase unit cost (\$/yd³) (if obtained off-site) Delivery unit cost (\$/yd³) (if obtained off-site) Acquisition cost (\$/acre) Line 1.a * line 1.b (on-site) or Line 1.a * (line 1.c + line 1.d) (or	(off-site)

3) Testing and QA/QC

c) Placement and compaction costs (\$/acre)

line 1.a * (line 2.a + line 2.b)

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		a)	Tests for grain size, Atterberg limits and hydraulic conductivity (\$/acre)		
		b)	Survey control for cover thickness (\$/acre)		
		c)	Density testing(\$/acre)		
		d)	Testing cost (\$/acre) Line 3.a + line 3.b + line 3.c		
	4)		OTAL COST, SOIL BARRIER LAYER (\$/ ue 1.e + line 2.c + line 3.d	/acre)	
b.	Ve	geta	tive Layer (topsoil) Material (6 inches) Pe	r Acre	
	1)	Ac	quisition		
		a)	Quantity of material needed per acre (yd³)	807 yd ³	
		b)	Excavation unit cost (\$/yd³) (if obtained on-site)		
		c)	Purchase unit cost (\$/yd³) (if obtained off-site)		
		d)	Delivery unit cost (\$/yd³) (if obtained off-site)		
		e)	Acquisition cost (\$/acre) Line 1.a * line 1.b (on-site) or Line 1.a * (line 1.c + line 1.d) (off-site)		
	2)	Pla	cement		
		a)	Spreading unit cost (\$/yd³)		
		b)	Placement costs (\$/acre) line 1.a * line 2.a		
	3)		OTAL COST, VEGETATIVE LAYER (top to 1.e + line 2.b	psoil)(\$/acre)	
c.	&	COI	L COST PER ACRE FOR ACQUISITION MPACTION OF FINAL COVER LAYER 4 + line b.3	·	
CC	ST	PEI	R ACRE TO ESTABLISH VEGETATION	(ALL AREAS)	
Ve	geta	tion			
a.	See	edin	g unit cost (\$/acre)		
b.	Fer	tiliz	ation unit cost (\$/acre)		

F.

1.

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	c.	Mulching unit cost (\$/acre)	·
	d.	TOTAL VEGETATION ESTABLISHMENT C Line 1.a + line 1.b + line 1.c	OSTS (\$/acre)
J.	CC	OST PER ACRE TO CERTIFY CLOSURE (ALL	AREAS)
•	Re	gistered Professional Engineer (PE)	
	a.	Initial review of closure plan (hrs)	
	b.	Total number of inspections	
	c.	Inspection time required (hrs/visit)	
	d.	Total inspection time (hrs) Line 1.b * line 1.c	
	e.	Prepare final documentation of construction of cover (hrs)	
	f.	Total engineer time (hrs) Line 1.a + line 1.d + line 1.e	
	g.	Professional engineer unit labor cost (\$/hr)	
	h.	Professional engineer cost (\$) Line 1.f * line 1.g	
	i.	Area of site permitted for filling (acres)	
		TOTAL CLOSURE CERTIFICATION COSTS Line 1.h ÷ line 1.i	(\$/acre)
Ŧ.	CO	THER COSTS PER ACRE FOR FINAL COVER	AND CERTIFICATION (ALL AREAS)
l.	Ot	her Costs (\$/acre) (describe on lines below)	

1.	Other Costs (\$/acre) (describe on lines below)						

TOTAL, OTHER COSTS PER ACRE (\$/acre)

I. SUBTOTAL, PER ACRE FINAL COVER AND CERTIFICATION COSTS

For closure over areas with composite bottom liner system, enter amount no less than \$75,000 For closure over areas without composite bottom liner system, enter amount no less than \$20,000

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Total, Section A.2 + Total, Section B.2, + Total, Section C.2 + Total, Section D.2 + Total, Section E.2 + Total, Section F + Total, Section G + Total, Section H	
VIII. OTHER CLOSURE COSTS - Please give on a total facility basis rather than a per acre	basis
A. Notation on Property Deed	
<u>B</u> . Other Costs - include here costs for such items as drainage features, gas vents, etc.	
1. Activity <u>Cost</u>	
C. TOTAL, OTHER CLOSURE COSTS Line A + line B	
IX. TOTAL CLOSURE COST [Item I.E (total fill acreage) * item VII.I (per acre final cover and certification costs)] + item VIII.C (other closure costs)	
X. CONTINGENCY COST Line IX * (0.10)	
XI. TOTAL CLOSURE COST ESTIMATE (including contingency cost) Line IX + line X	
XII. FINAL CLOSURE COST PER ACRE	
Line XI ÷ line I.E (total fill acreage)	
XIII. CONSTRUCTION QUALITY ASSURANCE/QUALITY CONTROL PLAN Attach at the end of this closure plan form a construction quality assurance/quality control assurance/quality control steps that will be taken during construction and installation of the	

- XIV. Optional INFORMATION REQUIRED FOR FACILITIES INCREMENTALLY FUNDING FINANCIAL ASSURANCE enter "na" on the first line of the table if you are not incrementally funding using one of these options
 - <u>A.</u> <u>Maximum Areas of Waste Deposition and Closure Costs</u> provide in the table below the listed information for each remaining year of the facility's life

Year	Maximum Area of Waste Deposition (cumulative acres at end of each year	Closure Cost w/o Partial Closure (\$)	Area Partially Closed (cumulative acres at start of each year)	Incremental Closure Cost Estimate (\$)
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<u> </u>		

Attach additional sheets if your facility's expected remaining lifetime is more than 20 years

- <u>B.</u> <u>Map of Areas of Waste Deposition</u> Attach copy of facility's final contour map marked to show the maximum areas of waste deposition for each succeeding year of the remaining life of the facility.
- **XV. LARGEST CLOSED AREA ESTIMATE** Provide an estimate of the largest area of the MSWLF unit ever requiring a final cover at any time during the unit's proposed active life.

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XVI. Optional - ESTIMATE OF YEARLY MAINTENANCE COSTS FOR A DIKE OR DIKES REQUIRED FOR CONSTRUCTION IN FLOOD PLAIN - provide in the table below estimates for the yearly maintenance costs for any dikes you will build if you are constructing your facility in a flood plain. Enter "na" on the first line if not applicable

Year	Costs (\$)

Year	Costs (\$)
_	

Attach additional sheets if your facility's expected remaining lifetime is more than 20 years

XVII. SIGNATORY CERTIFICATION

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the persons who managed the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further certify that I am authorized to submit this information."

Signature:	Date:	
Name:	Telephone No.:	
Address:		
-		
Profession	nal Engineer Registration No.	